



News from the Dam Safety Program

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Failure of Upper Carter Pond

Sterling was notified on July 13, 2004 that there was a problem with the Upper Carter Pond. This is a privately owned pond with a DFWP sponsored access site for fishing. The dam is 21 feet high, storage is about 144 AF and drainage area is 2.5 square miles. A failure had occurred within the past week or two and the majority of water in the pond had drained out. Apparently a hole developed in the riser pipe (cmp) and fill material piped through the hole creating a small void on the upstream face. There appeared to be no immediate safety threat as the remainder of the structure seemed stable and no water was moving along the outside of the conduit.

The US F&WS and Ducks Unlimited have become involved and there is an excellent chance they will help provide funding for rehabilitation of this dam and Lower Carter Pond as well. They expect work to be completed by next fall.

If you would like more information, please contact Sterling Sundheim at ssundheim@state.mt.us.



Control tower to left and principle riser to right. The void is beyond and between the two riser pipes.



Project News

Lower Willow Creek
Basin 1 & 2
Park Lake
Glen Lake Dam
Georgetown Lake

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Ackley Lake Relief Well Installation

Installation of two relief wells will be completed in October/November at Ackley Lake Dam to evaluate their effectiveness in depressurizing the deep foundation in the dam's toe area. The foundation consists of a deep fractured shale (bedrock), overlain by a tight clay/ash confining layer, in turn overlain by a clayey sand. The fractured shale is an aquifer, transmitting almost the entire pressure of the reservoir to the toe of the dam. These pressures, accompanied with the appearance of a new turbid seep in the same area, have gained the attention of the State Water Project Bureau.

This past spring several temporary measures were employed at the dam in response to the seep and foundation pressures. The reservoir was drawn down to reduce the foundation pressures and an inverted filter berm was placed over the seep to prevent sediment transport. These measures, along with intense monitoring of the dam's toe area, were used to allow the dam to continue to provide adequate water storage for the Water Users Association through the summer.

This fall the Bureau will be installing two relief wells and five monitoring wells to collect design information for a remedy. Following construction, pump tests will be performed to evaluate each relief well's effectiveness in reducing the deep foundation pressure. The Bureau is also interested to see if the shallow foundation water levels in the seep area will respond to the pumping. Exploratory excavation work is also

planned to examine the condition of the dam's toe drain.

Long-term fixes for the dam's drainage issues will be developed this winter utilizing the additional information obtained from the site this fall. The final solution may include a series of relief wells to depressurize the deep foundation, abandonment of the old toe drain and construction of a new one for controlling near surface seepage, and, construction of a stability berm to increase the load in the toe area. The Bureau is currently pursuing funding for this work from several sources. For more information, or if you would like to visit the dam site during the upcoming exploration phase, please contact Brian Grant at bgrant@state.mt.us.

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Significant Hazard Dam Program



The second year of our significant hazard dam program has been completed. The number of dams visited during the second year has doubled from the first year of the program. There were three dam-site visits completed the first year of the program, and six were completed this year.

The program has been very successful. Some dam owners have used their reports as a starting point to hire an engineer and obtain further information in regard to their dam. Most dam owners were surprised to learn of the various failure scenarios that their dam was subject to.

There has been over \$4,000 in incentive grants given to regional engineers to this point. Equipment bought at this point includes a desktop computer, GPS units, and digital cameras.

There will be an additional \$3,000 of incentive money towards the program this year. We are looking for each regional engineer to complete two dam visits between October 1, 2004 and September 30, 2005. Terry is always willing to help during these inspections.

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Homeland Security Risk Assessment

Bob Arrington and Jim Domino from the SWPB have been conducting a study to assess terrorism risk of dams controlled or regulated by the state. Accompanied by Tom Sanburg, who is overseeing the project, Bob and Jim will be visiting several dams around the state including Costich, Flower Creek, Swift, Cooney, Box Elder, Lewistown and Coalstrip. Items they will be looking for in this study include: accessibility or lack of it, downstream infrastructure and tourism icons that might make the dam an attractive target. With the results of the study to be completed by March of 2005, some of the highest ranked dams will be nominated for additional Homeland Security project grants. If granted, this money will be used to take security measures that will make the dams less likely to be targets and also to increase the community's response speeds to emergency situations involving these dams. POC for this study is Tom Sanburg.

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Contractors Guide

The contractor's guide (*Small Earthen Dam Construction, A Guidebook for Planning and Construction of Small Earthen Dam Embankments*) is now at the publishers. This will hopefully be completed in November and ready for distribution.

Kurt Hafferman will be presenting the contractor's guide at the Contractors Association convention in January.

If you would like a copy of this guidebook in pdf format on cd, please contact Jamie Scow at jscow@state.mt.us. She will make sure you get a copy. You can also find the guidebook on the DNRC website at www.dnrc.state.mt.us/wrd/home.htm , click on Dams and Canals, then click on Contractors Guide.

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Under training opportunities:

For the failure mode analysis course: here is the link

<http://training.fema.gov/EMIWeb/dsts/dsts.asp>

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